VERIFICATION OF SIMULATED NWS TORNADO WARNINGS DURING PARISE 2012

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Twelve NWS forecasters participated in the 2012 Phased Array Radar Innovative Sensing Experiment, which ran for six weeks during June – August 2012 at the NOAA Hazardous Weather Testbed in Norman, Oklahoma. The experiment's goal was to test whether rapid, adaptive sampling with the phased array radar at the National Weather Radar Testbed increases NWS forecasters' ability to effectively cope with tough tornado warning cases. Each forecaster worked four cases ranging from 18 – 52 minutes in length. Probe questions documented their work processes, reasoning, and judgments scan-by-scan through each displaced real-time weather case. EF0 and EF1 tornadoes were reported in 2 of the 4 cases, which allowed us to examine how rapid-scan data may help forecasters discern between tornadic and non-tornadic supercells, and the impact of the data on false alarms.

One way to assess impact of the PAR data on a forecaster's warning decision process is through the computation of verification statistics. These statistics were computed using the official methods employed by the National Weather Service. During the experiment 81% of tornado lead times exceeded the 12.5-min national mean lead time for EF0 and EF1 tornadoes (computed 1 January 2008 through 31 October 2012). 69% of lead times exceeded the 18-min national mean lead time for tornadoes rated EF2 and higher. The mean and median lead times across forecasters were 21 min. Polygon Probability of Detection values, defined as the average percent of tornado paths warned, were all 75% or higher. All False Alarm Ratios were 0.5 or lower. These quantitative results indicate that use of rapid-scan PAR data can improve tornado warning lead times for EF0- and EF1-rated events.

It is also important to understand how forecasters used the phased array radar data in their warning decision process. This analysis is in progress, and examines both the understanding of storm evolution gained from the data, as well as changes to their normal work habits that enhanced their capability to manage the rapidly updating radar data.